



Phytochemical Screening, Chromatographic Analysis (HPLC), Dosage of Phenolic Compounds, and Evaluation of Antioxidant and Antimicrobial Activities of *Stachys ocymastrum* L. from Algeria

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Abstract: This work aims to assess the biochemical content and biological activities of ethanolic extract and its fractions (Petroleum ether, chloroform and ethyl acetate) from the aerial part of *Stachys ocymastrum* L. Chemical screening, a measure of polyphenols contents, chromatographic analysis, antioxidant by different methods antimicrobial activities (zone diameter inhibition and minimal concentration inhibition). The qualitative analyzes carried out highlighted the presence of tannins, anthocyanins, saponins and alkaloids in all extracts, with the absence of steroids and triterpenoids in all extracts. The dosage of polyphenol contents has shown that all extracts are moderately rich in total polyphenols and flavonoids, and poor in tannin contents except ethanolic extract. The chromatographic analysis by the HPLC apparatus has enabled us to identify phenolics acid as gallic acid, and flavonoid as quercetin. The antioxidant activities revealed that ethanolic extract show a strong antioxidant activity which records a CAT of 85.51 ± 6.35 mg EAG/gms, $IC_{50}DPPH = 20.22 \pm 5.63$ ug/ml and $IC_{50}ABTS = 144.45 \pm 3.52$ ug/ml. The evaluation of antimicrobial activity notes that our extracts inhibit the growth of all the bacterial strains tested: where the ethanolic extract shows the highest activity with an inhibition zone of 19 ± 2.65 mm, to the contrary, certain fungal strains show resistance, the lowest value recorded as CMI is that against *Enterobacter* sp, for all extracts with a CMI less than 2 mg/ml. These activities of extract and fractions is due to phenolics and flavonoid contents identified by HPLC analysis, and other compounds wish acts as antioxidant and antimicrobial. We can say that *Stachys osymastrum* from Algeria can be considered a source of natural substances with interesting biological and therapeutic properties.

Keywords: *Stachys osymastrum*, phytochemical screening, antioxidant activity, cytotoxicity, antimicrobial activity..